

TRANSACTIONS OF THE CHICAGO SURGICAL SOCIETY.

Stated Meeting, April 3, 1905.

The President, DR. L. L. McARTHUR, in the Chair.

CARCINOMA OF THE LIVER.

DR. L. L. McARTHUR showed a patient that had been exhibited to the Society on former three years. The first time was during the Presidency of the late Dr. Christian Fenger. The patient had been referred to him by Dr. Favill, with symptoms of ulcer of the stomach. There was difficulty attending the differentiation between ulcer of the stomach and malignant disease of that organ. After long-continued lavage, etc., the patient was transferred from the medical to the surgical ward of St. Luke's Hospital to the speaker's service, and operative intervention resorted to. The operation disclosed a tumor of the lesser curvature of the stomach, which had grown into the under surface of the left lobe of the liver, requiring excision of a wedge-shaped piece of the liver and a wedge-shaped piece of the lesser curvature of the stomach. Specimens were examined by the pathologists, Drs. Hektoen and Zeit, and the disease was pronounced adenocarcinoma. When the speaker presented the microscopic specimens to the Society three years ago, Dr. Fenger, on examining them, pronounced the disease indubitable carcinoma of the stomach invading the liver, without any limiting membrane whatever, therefore not an adenocarcinoma, as the latter always pushed the capsule before it. The diagnosis was then revised by Drs. Hektoen and Zeit as a carcinoma proper of the liver.

The patient was presented again for the fourth time, not because he was still alive (death had been predicted to take place in a short time), but because in the past year symptoms of ulcer

of the stomach had again recurred and patient was again referred to him. On making an exploratory section he found that there was no recurrence of the disease at the seat of the old scar; that there were no new growths to be detected in the liver nor in the stomach wall, so he made a gastro-enterostomy by the anterior method, but perforating the gastro-colic omentum and carrying the knuckle of bowel posteriorly to the stomach, in front of the colon. The man had again been relieved of the symptoms of ulcer, and had gained thirty pounds in weight. Patient was an orderly at the hospital, and was again on duty attending to his work.

LYMPHATIC AND HEPATIC INFECTIONS SECONDARY TO APPENDICITIS.

DR. JOHN C. MUNRO, of Boston, Mass., read a paper with the above title.

DR. JOHN B. MURPHY said that his experience had been very small so far as infections from the appendix in association with the portal vein are concerned. If we take the type of various infections as a standard, we conclude by comparison that infections from the lymphatics take place rapidly; that infections through the portal circulation to the liver take place slowly, as infections through the lymphatics take place rapidly after the primary infection, that is, before there is a local immunity through occlusion of the lymphatics by the infiltration, which, however, does not always occur. The most striking example of absence of local infiltration (immunity) he ever saw was recently in a case he observed at Elgin, Illinois, with a history resembling perforative peritonitis that began on Friday, two days previous to operation. The symptoms immediately following intense pain were vomiting, cyanosis, great cardiac depression, which continued from the time of onset of the pain until two hours before operation. There was no sensitiveness in the area of the appendix; there was sensitiveness in front of the tip of the right costal cartilage extending downward. The question arose in his mind, Why should this patient be collapsed; why cyanotic, as he was a young, vigorous man, and why should vomiting persist in a case of ordinary appendicitis? His diagnosis was fat necrosis. The diagnosis advanced by the attending physician, Dr. Whitman, was appendicitis. The leucocyte count showed 29,000, which con-

traumatised fat necrosis, and this caused the speaker to waver in the diagnosis. Upon opening the abdomen he found gangrene of the appendix, no perforation, and no peritonitis, and *not the slightest infiltration of the meso-appendix*, the first time he had ever seen this, notwithstanding the fact that it was forty hours after the onset of the infection. Why was there an absence of infiltration in the meso-appendix? Infiltration means local immunity, local resistance to the absorption of infective products. Here there was no local immunity. Here were all the symptoms of intense sapræmia, and they corresponded exactly with the pathologic findings, because there was no local resistance offered by the lymphatics, which accounted for the intensity of the collapses from the infection. On examining the upper part of the abdomen, there were no evidences of involvement of the pancreas or liver; there was no local obstruction to the lymphatic flow. When pus infections are transmitted to the liver through the portal circulation, we must have a secondary process before we can have hepatic infection; we must have thrombophlebitis and escape of the infective material into the liver.

He had had two cases of pylephlebitis, in which the diagnosis had been made and verified by postmortem: one following operation for appendicitis and the other following an operation for hemorrhoids. Ten days after the hemorrhoidal operation, the patient had chills and fever, which were characteristic; namely, chills, with sudden elevation of temperature, the temperature remaining high for a time, then dropping down to normal. There was no regularity about it. It was typical of hepatic infection, whether that infection was from the lymphatics, from an impacted stone in the cystic or common duct, or from the portal vein. He saw this case in consultation six weeks after the operation for hæmorrhoids. The diagnosis was made on the clinical course of the chills and fever, and not on the physical findings. The necropsy showed the direct tract of infection from the hæmorrhoidal area to the portal vein and the secondary multiple abscess of liver and spleen. The other case occurred in a child within the last year that had been operated for appendicitis. The temperature was normal for forty-two hours after the operation, and then it began to rise. A diagnosis of pylephlebitis with hepatic infection was made, and post-mortem examination verified it.

The question of how the lymph circulation carried infection

into the substance of the liver was interesting, and some light has been thrown on this recently by the work of Terrier and Cunéo on the lymphatics. These authors have demonstrated beyond question that in certain areas of the liver, and particularly on the lower and costal surfaces of the right lobe, we have lymphatics, not taking the usual general course from the surface of the liver beneath Glisson's capsule, extending to the suspensory ligament, or extending to the sublymphatic glands around the gall-bladder, but passing directly from the surface into the liver and along the portal vein to the hilum. If these lymphatics take this course, as there is every reason to believe they do, one can readily see how an infection extending to the under surface of the liver from the appendix, either by direct lymphatic transmission or along the surface or side of the colon, could immediately infect the lobe of the liver and form an abscess. This is the most elucidating information which he has received up to the present time. He had seen on one occasion the appendix with a peri-appendiceal abscess adherent to and involving the under surface of the liver, but not extending into the parenchyma.

DR. E. WYLLYS ANDREWS recalled the paper read about a year ago by Dr. Le Conte, on the subject of rupture of the mesenteric glands simulating typhoid perforation. This belonged to the category of atypical cases, the source of the infection being a typhoid ulcer, producing lymphadenitis and suppuration in the gland, with rupture of the abscess into the peritoneal cavity, which simulated closely perforative typhoid, causing subdiaphragmatic abscess, violent infection, and collapse. Since reading this paper, two cases had occurred here, one in the speaker's own practice, and one in the practice of a colleague. The abdomen was opened under the suspicion that he had a perforating typhoid, and the true condition was that of a retroperitoneal abscess bursting through into the peritoneal cavity. He thought it was impossible to make a differential diagnosis between this condition and typhoid perforation before operation.

Two cases of pneumococcus peritonitis also occurred, one in the County Hospital and one at Reese Hospital. Both were marked by an absence of distention, ileus, or the ordinary signs of diffuse peritonitis. Both ended fatally.

DR. L. L. McARTHUR reported the following cases in his own experience. First, as a type of hepatic infections probably portal

in their origin was a case referred to him by Dr. Collins of this city; seen by Dr. Collins first at about ten o'clock at night, diagnosed as an acute gangrenous appendicitis, and operated by him and the speaker at about five in the morning, a gangrenous appendix being found and removed, as yet unruptured, but in a condition so that migration of the organisms was possible through the dead and gangrenous wall of the appendix. However, it was deemed safe to close the abdomen with a small drain in case there had been a passage of micro-organisms through the intact but dead wall of the appendix. There was a normal, satisfactory convalescence, the patient being up on the tenth day, when symptoms of a low grade of fever, without any local symptoms, developed. Two consultants were inclined to regard it as an atypical typhoid, because a Widal was reported from the Health Department, and a partial Widal at the hospital examination. The temperature rose higher and higher for three or four days, until it reached 106° F., with violent rigor. In a state of desperation, in the absence of any local guide, the speaker inserted a Dieulafoy aspirating needle of good size into the right lobe of the liver, and fortunately struck a cavity containing stinking pus. The trocar was left *in situ*, and the patient taken to the operating table. After aspirating a sufficient quantity of pus to reduce the abscess pressure, the liver was exposed along the track at which the needle had entered (between the tenth and eleventh rib on the right side), finally exposing the abscess, which was opened and drained, the patient making a good and prompt recovery. The temperature dropped, and all symptoms became normal in a brief time, with this exception, there was a persistence for six months afterwards of a biliary fistula, evidently a large bile tract having been cut off by the large abscess. As long as the tube was left *in situ* the patient was well, up and around, and gained in weight. Once or twice the removal of this tube was attempted, but each time a rise of temperature required its reinsertion. The patient drifted away from the hospital. He returned after three months, with a suspected retention in the old abscess. Operation was made, but no abscess was to be found. The abdomen was opened, the gall-bladder region and subhepatic region explored, the liver explored by multiple puncture, but no abscess found. Death ensued nine months after the appendectomy, which, by the way, made no further trouble, and at the post-mortem examination it was found that a small abscess not

much larger than an almond had formed apparently in the lymphatic gland behind the common duct and internal to the usual position of these lymphatic glands at the hilus of the liver.

He thought it uncertain whether in this case the infection came from the hepatic area along the venous channel, and whether death finally ensued from this solitary abscess in the lymph-gland at the hilus of the liver, or whether a secondary infection from the liver to this lymphatic gland had occurred.

One of the most striking types of infection of the portal circulation was seen by him in a case in connection with Dr. Billings and Dr. Bridge, in which the diagnosis was doubtful. Dr. Bridge had had the patient under treatment for eleven days as a case of atypical typhoid. Dr. Billings was called in to see the case, and considered it one of interstitial hepatitis, probably a pyelephlebitis. There was a sudden exacerbation of an alarming character in the symptoms of the patient, much resembling a typhoid hæmorrhage, with great shock, collapse, cold, clammy extremities, depleted blood-vessels. Dr. McArthur being called, was inclined to believe it to be a case of perforation from typhoid associated with typhoid hæmorrhage. The condition of the patient being desperate, a laparotomy was made. Perforation of a large vein in the mesentery of the cæcum was found, induced by a gangrenous appendix resting upon it. There was gangrene of the wall of that mesenteric vein and a severe hæmorrhage into the abdomen of a portal type. Post-mortem examination revealed a pyelephlebitis which had occurred prior to the giving way of this wall, and the diagnosis of Dr. Billings was verified to that extent.

Again, in the practice of Dr. Frankenthal, the speaker saw a case of sudden fatal hæmorrhage as a result of a phlebitis incident to the resting of the appendix upon such a vein. Hæmorrhage was so severe as to cause death, and occurred through the abdominal wound, which was provided with a gauze drain, the blood escaping externally, but was so severe that before aid was given death ensued.

DR. MUNRO, in closing the discussion, said he had operated altogether on thirty-seven cases out of thirty-nine, but this did not include several cases he had seen in other men's work. There had been quite a number of such cases as he had described in his neighborhood. He recalled the case of a patient, ill for a number

of months, where a wrong diagnosis had been made, although it was a perfectly clear and straight case from the start of a typical appendicitis, with portal infection. It should have been recognized as such, but was not, and, what was most significant, at the autopsy the appendix was overlooked and not examined.

As to the infection that took place rapidly, both lymphatic and portal, the course might be extremely rapid, and simulating cases of fat necrosis at times. In one of his cases the lymphatic and portal infections were overwhelming, so that it was impossible to tell which was the more rapid. He believed that, in the long run, portal infections took place more rapidly than lymphatic, but not necessarily.

It was interesting, in going over the autopsies of cases reported twenty to forty years ago, to see that the three types were more or less grouped together, and, although there might have been cases in which portal infection predominated, yet careful autopsy would show that the lymphatics were often infected as well.

As to Dr. McArthur's case of biliary fistula, he had never seen a fistula persist as long as that without the patient dying. He thought his case was probably infected through the lymphatics. One of the speaker's recent cases of this type recovered. He was sure from his observation that lymphatic gland infections would remain dormant for months at a time, and then wake up, so to speak, and prove serious or fatal. Hæmorrhage from the veins he had not seen recorded.

EXCISIONS OF LIVER TISSUE.

DR. JACOB FRANK reported eighteen experiments on dogs. Two consisted of simply incising the liver through its entire thickness, without any suturing or other attempt to control hæmorrhage. Both dogs recovered. In the remaining sixteen experiments he pursued the following plan: When a portion of liver was to be removed in a transverse direction, a wedge-shaped piece was removed transversely to the vena cava, leaving the organ with two flaps forming a trough. The flaps were then quickly coapted, and with a long, non-cutting needle, threaded with a medium heavy catgut, a continuous suture was taken, the sutures alternating, one carried through the liver tissue near the bottom

of the trough, and one superficially, until there was complete closure. It required very slight tension to approximate the flaps. The main object was to bring the flaps together obliterating all dead space. When a portion of liver was to be removed in a longitudinal direction to the viscus, a wedge-shaped piece of the entire thickness of the liver was cut out longitudinally, thus removing the desired part. The broad, raw surfaces left by the removal of the wedge-shaped portion was converted into troughs, which was accomplished by the excision of wedge-shaped pieces. The troughs thus formed had two flaps. When the operation was completed, the raw surfaces of the original V left were transformed into smooth, continuous liver tissue, assuming the form of liver borders, and the V space left persisting as a notch.

This method of incising the liver facilitated easy suturing and did not require any tension on the suture to coaptate the flaps. Hæmorrhage was successfully arrested, and the continuity of liver surface re-established. No drainage was used in any of the experiments.

DR. JOHN C. MUNRO said that the ordinary V-shaped incision had proven sufficient in a number of instances in which he had sutured the liver, using coarse catgut. In bringing the edges of the wound together, it was best to have an assistant make pressure on the liver itself with his hands, bringing the flaps together, before placing the sutures. They could then be tied, without the liability of their cutting through.

DR. WILLIAM E. SCHROEDER stated that a year and a half ago he removed a third of the right lobe of the liver for primary abscess, and used a long needle with mattress sutures for suturing the liver tissue, with which he was able to control hæmorrhage nicely. The patient made an uninterrupted recovery.

DR. L. L. McARTHUR had had two cases in which he had sutured the liver, one requiring the removal of a wedge-shaped piece of the under surface of the liver. In this case tamponing was quite sufficient to control the hæmorrhage. In the other case the tumor was situated under the ensiform cartilage; the patient was transferred to the surgical service of the hospital as a probable aneurism of the aorta. Bruit and pulsation were present and vomiting distressed the patient. A laparotomy was made. A diagnosis was made of possible tumor of the liver pressing on the stomach and producing vomiting. This was found to be true, and

search for the primary source of the trouble in the stomach or gall-bladder failed to reveal primary carcinoma there. A carcinoma of the left lobe of the liver as large as an orange was removed by means of a wedge-shaped incision. Tamponing was resorted to for controlling hæmorrhage, which it did satisfactorily. The patient recovered, so far as the removal of the tumor was concerned, but died later of carcinoma of the lesser curvature of the stomach, which was so small as to have been overlooked. Where large wedge-shaped pieces are removed from the liver, the speaker thought that patients would fail to have an exit for the bile, and that therefore leakage would occur. The patient mentioned had a permanent biliary fistula, and died from carcinoma of the stomach. To control hæmorrhage in that way, he would expect a biliary fistula, if extensive wedge-shaped pieces of the liver were removed from the human being, with sequelæ later to be dealt with.

DR. FRANK, in closing the discussion, said his experience had been that, with a wedge-shaped piece taken out of the liver, it was almost impossible to bring the tissue together. It was certainly impossible to hold with suture the liver tissue long enough for it to unite, and this was one of the reasons that induced him to conduct the series of experiments he had detailed. He had cited cases in which tamponade was employed, as referred to by Dr. McArthur, and his experiments were conducted with a view of doing away with tamponing or packing. He thought the surgeon should deal with the liver as he would deal with a case of resection of the kidney or the removal of the uterus, closing the wound completely. In injuries of the liver there was usually bile leakage, which came on six, eight, or nine hours afterwards, and was it not possible, if one could bring the two surfaces in contact, to re-establish continuity? Then union would take place so rapidly that there would be no leakage of bile.